

## A WAFER BONDED VIRTUAL SUBSTRATE AND METHOD FOR FORMING THE SAME

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### Abstract of the Disclosure

A method of forming a virtual substrate comprised of an optoelectronic device substrate and handle substrate comprises the steps of initiating bonding of the device substrate to the handle substrate, improving or increasing the mechanical strength of  
10 the device and handle substrates, and thinning the device substrate to leave a single-crystal film on the virtual substrate such as by exfoliation of a device film from the device substrate. The handle substrate is typically Si or other inexpensive common substrate material, while the optoelectronic device substrate is formed of more expensive and specialized electro-optic material. Using the methodology of the  
15 invention a wide variety of thin film electro-optic materials of high quality can be bonded to inexpensive substrates which serve as the mechanical support for an optoelectronic device layer fabricated in the thin film electro-optic material.